



QUANTITATIVE





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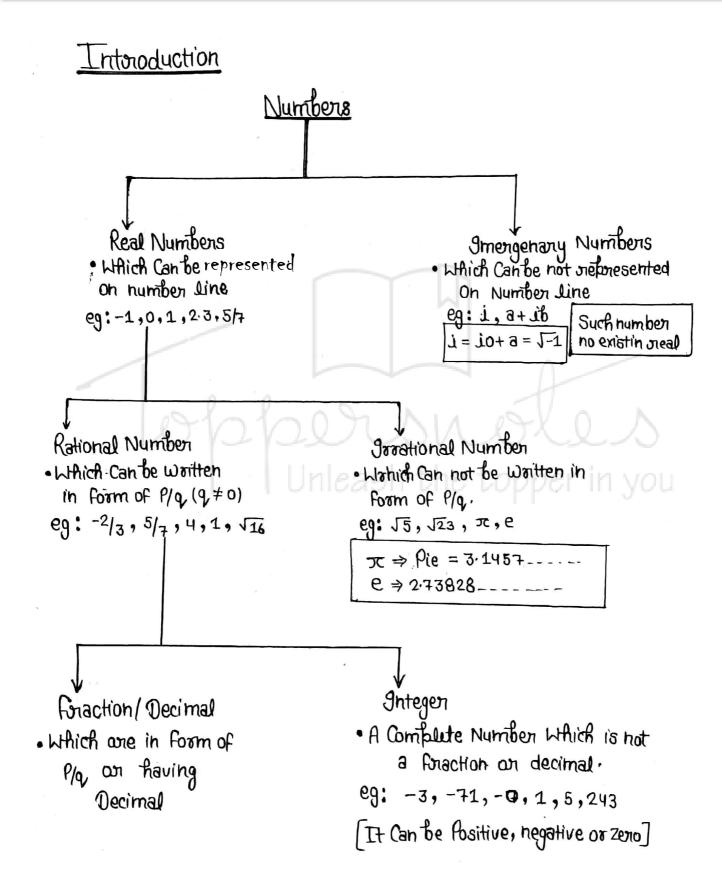
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NUMBER SYSTEM



- Whole Numbers: Integers Starting From O.
- Natural Numbers: Integens Stanting From 1.
- <u>Porime Numbers</u>: The number Which is divisible by 1 & no. itself is Called a Porime number.

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eg: 2, 3, 5, 7, 11, 13 etc

1 is not a Porime humber

There are 25 Porime number b/w 1 to 100

• <u>Composite Number</u>: The number which have more than two factors are called composite numbers.

eg; 4,6, 12, 21, 28 etc.

The numbers which are not prime are Composite Number <u>Co-Ponime Number</u>: Numbers having their HCF is 1 are termed as Co-prime Numbers. eg: 14 & 15.

Even Number: Rational number Which are the multiple of 2 is Called as even numbers.

eg: 2,4,6,48,92 ____etc.

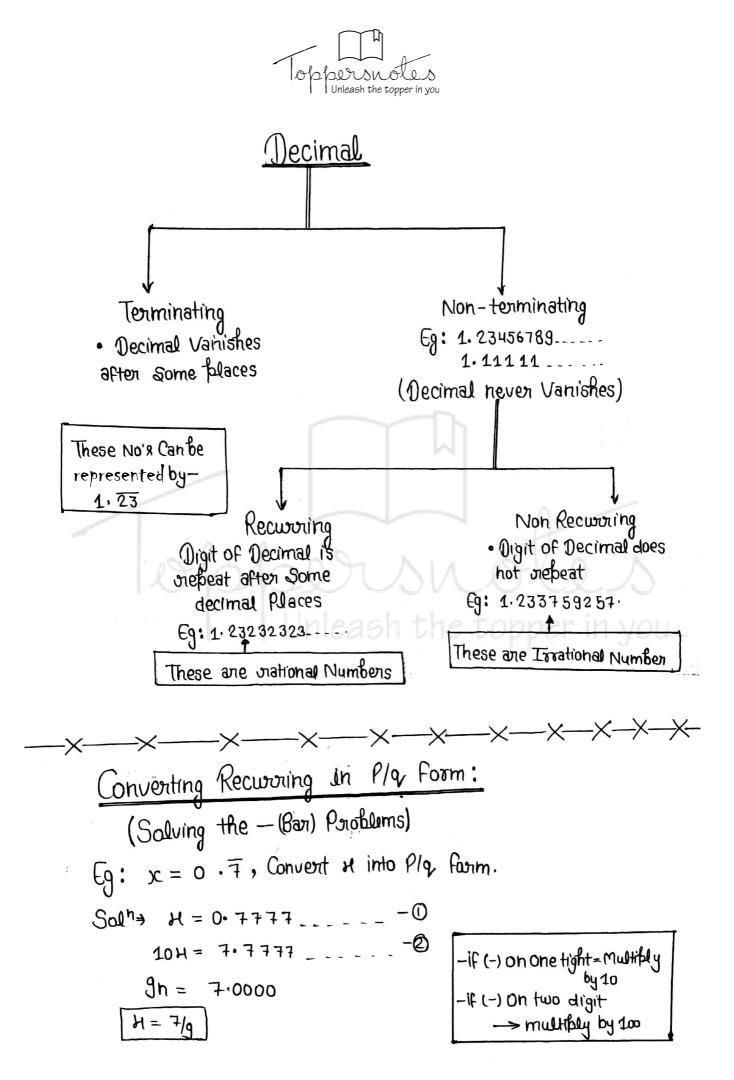
Odd Number: Rational Numbers Which are not multiple of 2 are Odd. Number.

eg: 1, 3, 5, 91, 103, 249						
leven	Numbers	ending digit is 2,4,6,8,0 &				
Odd	Nymbers	ending digit is 1,3,5,7,9				

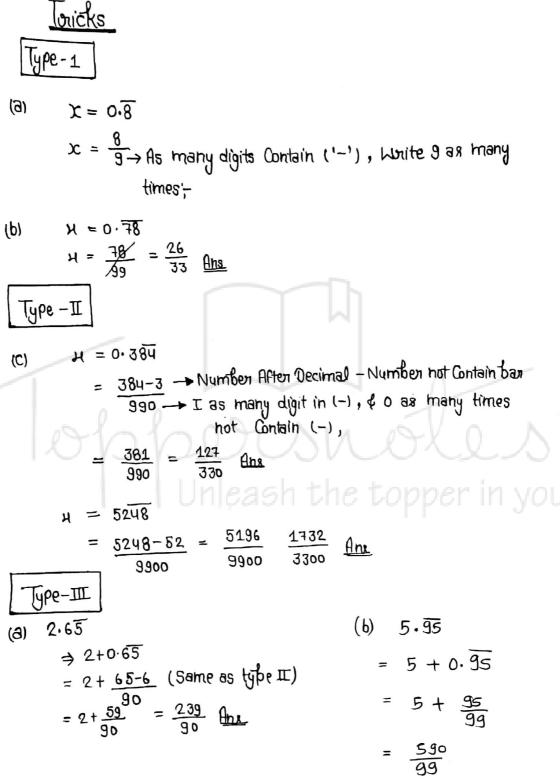
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Properties of Odd and even Numbers:

- even + even = Even
- ODD + ODD = Even
- Even + ODD = ODD
- Even + Even _ - - + n times = Even (always)
- Odd + Odd _____ Odd numbers of times = ODD
- ODD + ODD ----- even number of times = Even
- Even x Even = Even
- Eved x odd = Even
- Odd x odd = Odd
- Even x (Even / Odd) = Even









Divisibility Rules =

Number	Rule	EXAMPLE	
2	Last digit is divisible by 2, or last digit is 0,2 4,6,8.	Eg:2348 1948	
3	Sum of digit is divisible by 3.	Eg: 1071 1+0+7+1=9	
ц	Jast two digit of number is divisible by 4	14 <u>32</u> 92 <u>84</u>	
5	Last digit is 5 or 0	2335, 1990	
6	Number is divisible by 2 and 3 each	132→divisible by2 1+3+2→divisible 3	
707	•Multiply last digit by 5 • Add the above number • IF Jemaing digits divisible 7, then number is divided by 7	Eg: 343 (i) $3 \times 5 = 15$ 34-15 = 49 divisible by 7.	
8	Last 3 digit ane divisi- bu by 8	8032→32 Divisible by 8	
9,	Sum of digits is divis- ible by g	$1071 \rightarrow 1+0+7+1=9$ $d_{1}v_{1}s_{1}b_{1}g_{1}g_{1}$	
11.	• Definence of Sum of digit at odd Places & Sum of digit at Sven Tplacex.	• 1331 (3+1) - (3+1) = 0 • 11718520 (1+7+8+2) - (1+1+5+0)=11	

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(2) IF 3H2680, is divisible by 11, then the Value of H is:

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Solh: (Sum of Odd Rlace digit) - (Sum of Even Rlace digit) = (3+2+8) - (++6+0)= 13-6-4= 7-4 (Eithen 0 or divisible by 11) = 7+4=0 H=7 Ang. Unleash the topper in you

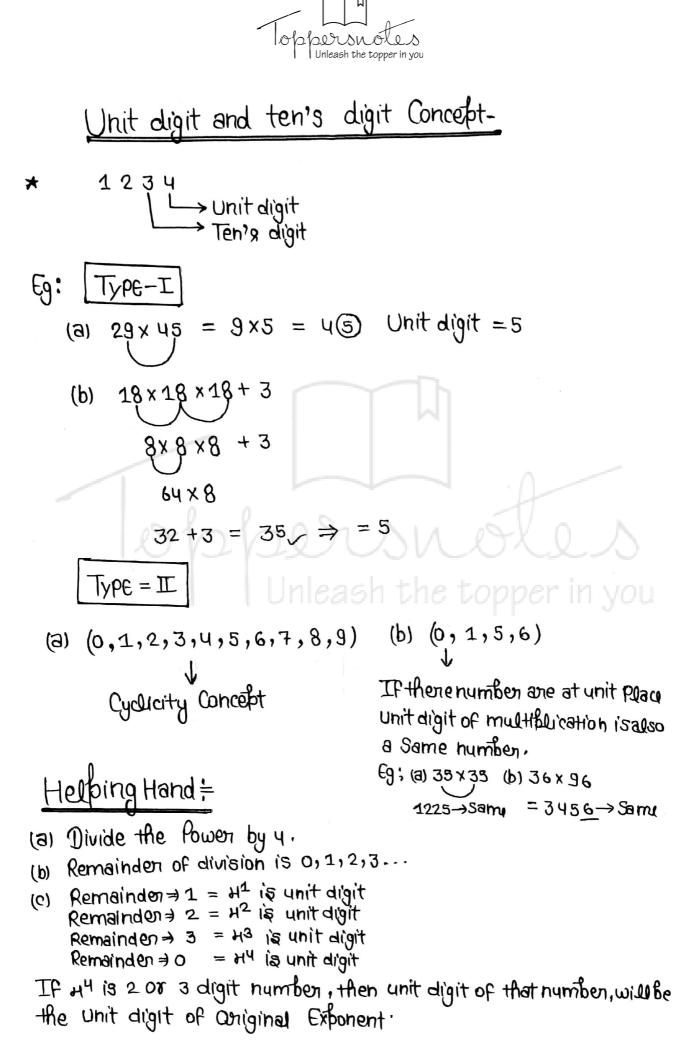


<u>Cyclicity:</u>

Unit digit is subjected after some time of an enforment.

$2^{1} = 2$ $2^{2} = 4$ $2^{3} = 8$ $2^{4} = 16$ $2^{5} = 32$ $2^{6} = 64$	$3^3 = 27$ $3^4 = 81$ $3^5 = 243$ $3^6 = 729$	$y^{1} = y$ $y^{2} = 16$ $y^{3} = 64$ $y^{4} = 216$ Cyclicity=2	$7^{1} = 7$ $7^{2} = 49$ $7^{3} = 343$ $7^{4} = 2401$ $7^{5} = 16807$ Cyclicity =4
Cyclicity =4	Cyclicity = 4		0
$8^{1} = 8$ $8^{2} = 64$ $8^{3} = 512$ $8^{4} = 4096$ $8^{5} = 32768$	$9^{1} = 9$ $9^{2} = 81$ $9^{3} = 729$ $9^{4} = 6561$ Cyclicity=2		per in you
Cyclicity = 4			

Eq. (2)⁴²³, Find the digit at units Place Soln (a) divide the power by 4 In Examsdivide in 4)<u>423</u> (105 Remainder = 3 drind, not in Pen-Paper, $\frac{4}{23}$ $2^3 = 8$ Anz 2^3



_

(4) Which one of the fallowing no. is divisible by 11? (c) 315624 (d) 415624 (b) 245642 (a) 235641 Saln=> (a) 235641 (2+5+4) - (3+6+1) = 1 (not divisible by 11) (b) 245642 (2+5+4) - (4+6+2) = 1 (not divisible by 11) (C) 315624 (3+5+2) - (1+6+4) = -1 (not divisible by 11) (4+5+2) - (1+6+4) = 0 (divisible by 11) (d) 415624 IF a number is divisible by 11, the Difference of Sum of digit at odd places & sum of digit at even places is either O On divisible by 11. Which on the fallowing number is divisible by 24 -(5) (b) 63810 Saln → (a) (C) 63810 35718 (C) 537804 (d) 3125736 (3) (8)35718 3+5+7+1+8 718 x = 2y 🗸 63810 6+3+8+1+0 810 X = 18 🗸 537804 5+3+7+8+0+4 804 X = 27 🗸 736~ 3+1+2+5+7+3+6 3125736 = 27 ~ If a hovis divisible by another number then it must be divisible by it's prime factors.

Unit digit Concept: The digit at unit's place of the Product -6 81 x 82 x 83 ----- × 89 JS (b) 2 (c) 6 (d) 8(a) OSaln→ 81×82×83×84×85....×89 1x2 x 3 x 20 --- X6 x7 x8 x9 =0IF we multiply a number by 0, the nesult at unit place is always zero. (1) The digit in unit's Place of the Product (2153) 167 is: (a) 1 (b) 3 (c) 7 (d) 9 Soln = 215 $3 \rightarrow$ Let base is 3h the topper in you **b** $\frac{167}{4} \Rightarrow$ Remainder is 3 $\bigcirc 3^3 = 27 \rightarrow \text{unit digit is } 7$ Ohit digit in (264) ¹⁰² + (264)¹⁰³ is -(C) 6 (d)(b) 4 (a) 0 Saln \Rightarrow (264) $\frac{102}{102}$ + (264) $\frac{103}{103}$ IF Base is 4, then (a) = Unit digit of even power is always 6 (b) = Unit digit of odd Power is always 4. = 6 + 4= 10 Unit digit = 0 because Cyclicity is 2

Unleash the topper in you (9) Unit digit of (169)⁵³⁷ + (94)³⁹⁴ is. (d) (b)(C)(8) Saln⇒ (169)⁵³⁷+ (94)³⁹⁴ IF the Base is 9 (a) Unit digit of ODD Power is always g. 6 9 + (b) unit digit of even Power is always 1. = 15 because Cyclicity is 2. = unit digit is 5 Ane (10) The dugit in the unit blace of $(251)^{98} + (21)^{29} - (106)^{100} + (105)^{35} - (16)^{4} + 259 + (73)$ is -(c) 5 (d) 6 (b) 4 (a) 1 Soln= $(251)^{98} + (21)^{29} - (106)^{100} + (705)^{35} - (16)^{4} + 259 + (73)^{51}$ 1 + 1 - 6 + 5 - 6 + 9 + 7Unit digit of base 1, 5, 6, is always Same 51 =Remainder 3 3 == 23-12 = 11 Ang each the top $3^3 = 27$ (1) Unit digital in expression of (2137)⁷⁵⁴ is -(a) 1 (b) 3 (C)7 (d) 9 Saln = (2137)⁷⁵⁴ → Base in 7 $\frac{754}{4}$ Remainder = 2 $7^2 = 49 \rightarrow \text{unit digit is } 9 \checkmark$ Find the unit's digit of (358) 64 ~ (253) 36-(12) (C)7 (b)Y (d) 9 (2) 5 Saln= (358)64~ (253)36 $\begin{array}{ccc}
\underline{64}^{} & \underline{36} \\
\underline{8} \\
0 & \longrightarrow & \text{Remainden} \leftarrow \underline{8} \\
\end{array} \xrightarrow{34} \xrightarrow{34} \xrightarrow{3} & \underline{34} \\
\end{array}$ $8^{4} = 64 \times 64 = 16 - 1 = 5 Anx$



solved examples

1- what Least Number must be added to 1056, so that sum is completely divisible by 237 $(\alpha)_2$ (b) 2 (d) 21 (c) 18 sol. 23 1056 (45 92 136 115 21 then number added is = 23-21 = 2. 2- The largest 4 digit number Exactly divisible by 88 is-(a) 9944 (b) 9768 (c) 9988 (d) 8888 sal. Langest y digit Number = 9999 88) 9999 (113 319 264 55 -> Sub tract from the 4 digit largest humber = 9999 - 55 = 9944. 3-4 the number 517x324 is completely divisible by 3, them the smallest whole no. in place of x will be-(a) 0 (6) 1 (c) 2 (d) None sol. If number indivisble by 3 5+1+7+ ++3+2+4 them sum of digit is also = 22 + H divisible by 3.

IF 2 is used in place of H, then number is divisible by 3 (i-e-24)

4-which one of the following no. is divisible by 11? (a) 235641 (b) 245642 (c) 315624 (d) 415624 sal. (a) 235641 (2+5+4)-(3+6+1) = 1 (not divisible by 11) (b) 24G642 (2+5+4)-(4+6+2) = -1 (not divisible by 11) (c) 315624 (3+5+2)-(1+6+4) = -1 (not divisible by 11) (d) 415624 (4+5+2)-(1+6+4) = 0 (divisible by 11)

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IF a number is divisible by 11, the Difference of Sum of digit of digit at odd blaces & Sum of digits of even blace is either 0 or divisible by 12.

5-which on of the following no. is divisible by 24? (6) 63810 (d) 3125736 (a) 35718 (c) 537804 3 (8) sal. 35718 3+5+7+1+8 718 x = 24 V 63810 6+3+7+8+1+0 810 X = 18 537804 5+3+7+8+0+4 804 x =27 3125736 3+1+2+5+7+3+6 736V = 27 If a no is divisible by another humber, then it must be divisible by its Primi Factors 6-The digit at unit's place of the product $81 \times 82 \times 83... \times 89$ (a) 0 (b)2 (c) 6 (d) 8 81x 82x 83 - - - - × 89 is sol. (ato (C)6 (b)2(q)SWAD 81X 82 X 83 X 84 X 85 X89 1x2x3x20----x6x7x8x9 multiple a number of o, the cresult at unit If we place is always zero.